

**UTILITY APPLICATION**  
**OF**  
**VICTOR PALACIO**  
**FOR**  
**UNITED STATES PATENT**  
**ON**  
**COLLAPSIBLE CRATE**

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# **COLLAPSIBLE CRATE**

## **Cross-References to Related Applications**

This patent application claims priority from United States Provisional Patent  
5 Application Serial Number 60/449,202 filed February 19, 2003 for COLLAPSIBLE CRATE,  
which application is incorporated herein by this reference thereto.

## **BACKGROUND OF THE INVENTION**

### **Field of the Invention**

This invention relates generally to crates, and in particular to crates which are  
collapsible or foldable.

### **Description of the Related Art**

Containers having an open top for convenient storage and delivery of items have been  
10 designed as foldable for convenient storage of the containers themselves. See for example  
Saunders U.S. Patent No. 3,796,342. Such containers, however, may have an unstable and  
heavy design, which uses too much material, making them costly and less than ideal for  
delivery of heavy items, such as a plurality of one-gallon milk or water jugs.

## **SUMMARY OF THE INVENTION**

The present invention provides a collapsible crate which has an especially sturdy construction, making it particularly suitable for containing and transporting large containers, such as one gallon water or milk jugs, and the like. The crate may also be used for suspending  
5 file folders without the use of a rack onto which the file folders are suspended. The crate comprises a bottom panel, a top rectangular frame, two side panels pivotally connected at opposite ends of the frame, and front and back folding panels pivotally connected at their lower ends to opposite ends of the bottom panel and at their upper ends to corresponding opposite ends of the top frame, adjacent the side panels. The crate appears as a normal milk crate, but is  
10 collapsible to a very low profile by swinging the side panels up toward the frame, so that the side panels are substantially parallel to the bottom panel and co-planar with the frame, then allowing the front and back panels to fold inwardly to bring the top frame and bottom panel together, such that the crate structure is compressed into a compact configuration.

## **OBJECTS OF THE INVENTION**

15 It is an object of the present invention to provide a crate which is collapsible or foldable to a compact configuration.

It is another object of the present invention to provide a collapsible crate which has an especially sturdy construction, making it particularly suitable for containing and transporting large containers, such as one gallon water or milk jugs.

It is yet another object of the present invention to provide a collapsible crate which can  
5 be used for directly suspending file folders, without the use of an additional rack for suspending the folders.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is a perspective view of the crate of the present invention, shown in its  
10 functional state.

Figure 2 is a perspective view of the crate of Figure 1, containing six one-gallon water bottles.

Figure 3 is a perspective view of the crate of Figure 1, shown in its collapsed  
stated. Figure 4 is a perspective top view of the bottom panel of the crate of Figure 1, shown  
15 disassembled from the crate.

Figure 5 is a perspective view of the inner side of the lower and upper panel sections which form the front panel of the crate of Figure 1, the front panel being identical to the back panel. The upper and lower sections are shown unconnected to each other and disassembled from the crate.

20 Figure 6 is a perspective view of the top frame of the crate of Figure 1, shown disassembled from the crate.

## **DESCRIPTION OF THE PREFERRED EMBODIMENT(S)**

The detailed description set forth below in connection with the appended drawings is intended as a description of presently preferred embodiments of the invention and is not intended to represent the only forms in which the present invention may be constructed and/or utilized. The description sets forth the functions and the sequence of steps for constructing and operating the invention in connection with the illustrated embodiments. However, it is to be understood that the same or equivalent functions and sequences may be accomplished by different embodiments that are also intended to be encompassed within the spirit and scope of the invention.

The present invention provides a collapsible crate 1 comprising a bottom panel 2, a top rectangular frame 3, two side panels, 4 and 5, pivotally connected at opposite ends of the frame 3, and front and back folding panels, 6 and 7, pivotally connected at their lower ends, 8 and 9, to opposite ends of the bottom panel 2 and at their upper ends, 10 and 11, to corresponding opposite ends of the top frame 3, adjacent the side panels. The crate 1 is foldable or collapsible to a low profile (see Figure 3) by swinging the side panels 4, 5 up toward the frame 3, so that the side panels are substantially parallel to the bottom panel 2 and co-planar with the frame 3, then allowing the front and back panels 6, 7 to fold inwardly, bringing the top frame 3 and bottom panel 2 together, such that the crate structure is compressed into a compact configuration. The side panels 4, 5 may overlap at their bottom ends 12, 13, depending on the length of the panels.

The crate 1 has an especially sturdy construction, making it particularly suitable for containing and transporting large containers, such as water or milk jugs, as shown in Figure 2. The panels of the crate 1 are preferably constructed from plastic forming a mesh pattern for a

low material, lightweight, and cost effective construction. Figures 4 through 6 illustrate the bottom and front panels, and top frame of the crate, with each member shown separate from the crate, and without the mesh pattern, for purposes of illustration.

The bottom panel 2 of the crate 1 is a piece which includes a base 15 which forms a  
5 bottom support for the crate 1, and a shallow border wall 14 extending orthogonal and  
upwardly from the base 15 forming a low perimeter wall around the base. The border wall 14  
comprises opposite side walls, 16 and 17, and opposite front and back walls, 18 and 19, as  
shown in the figure. The side walls 16, 17, each includes a pair of apertures, 20 and 21,  
receptively, wherein each aperture is proximal to a corner of the border wall 14, for receiving  
10 a hinge pin from an adjacent lower side end of the front and back folding panels 6, 7. The  
front and back walls 18, 19, each include hinge notches or recesses, 22 and 23, which extend  
inwardly from each wall, for pivotally connecting at the lower ends 8, 9 of the front and back  
folding panels 6, 7, via metallic hinge pins. Additionally, central hinge coupling panels 32, 33,  
form receiving panels which pivotally interconnect with pin rods formed on the lower ends 8, 9  
15 of the front and back panels 6, 7.

The front panel 6, which is identical to the back panel, is illustrated in Figure 5. The  
panel 6 includes upper and lower panel sections, 24 and 25, respectively, which are shown  
unattached in the figure for illustration purposes. The panel sections 24, 25, include mating  
hinge notches 26, 27, at their lower and upper edges, 28, 29, respectively, which are pivotally  
20 interconnected via hinge pins (not shown), to form the foldable panel 6.

Also, the upper section 24 includes L-shaped extending panels 36, for engagement with  
corresponding receiving grooves 37 on the lower section 25. The engagement between the

panels 36 and grooves 37, prevents the lower and upper sections from folding outwardly and lends sturdiness to the crate structure when the crate is in its unfolded or upright configuration.

Additionally, the lower panel section 25 includes hinge notches or recess 31 at its lower end 8 which interconnect with mating hinge notches or recesses 22 on the top frame.

5 Additionally, medial pin rods 34 are formed at the lower section 8 which pivotally interconnect with the pin receiving panels 32 of the bottom panel 2. Likewise, the upper panel section 24 includes hinge notches or recesses 30 at its upper end 10, and pin rods 35 which interconnect with the notches or recesses and pin receiving panels formed on the top frame 3, similar to the notches or recesses 22 and panels 32.

10 The upper and lower panel sections 24, 25, further include side L-shaped panels, 38 and 39, for engagement with recesses on the side panels, 4 and 5, when the crate is in its unfolded configuration, lending further stability to the crate structure.

The top frame 3 of the crate 1 is shown in Figure 6, and includes front and back frame walls, 40 and 41, and side walls, 42 and 43. The walls 40, 41 include hinge notches or  
15 recesses similar to the notches or recesses, 22 and 23, on the bottom panel, and hinge coupling panels forming pin receiving panels, similar to the panels 32 and 33 of the bottom panel 2, for pivotally coupling to the upper ends 10, 11 of the front and back panels 6, 7.

The front and back walls 40, 41 each includes a pair of apertures, formed in recessed portions proximal the corners of the top frame 3. (The aperture and recessed portions 43 are  
20 shown in the figure only for the front wall 40). The aperture on the walls 40, 41 are similar to the apertures 20 and 21, and receive a hinge pin from an adjacent upper side of the side panels 4, 5, forming a pivotal coupling with the side panels. The side panels further include a central

pin rod, similar to the pin rods on the front and back panels, which pivotally couple with central pin receiving panel on the side walls 42, 43 of the top frame 3.

Additionally, the pivot axes of the side panels 4, 5, are located above the pivot axes of the front and back panels 6, 7 on the top frame 3. This allows the crate 1 to be folded by pivotally swinging the side panels 4, 5, upwards towards the top frame before folding the front and back panels 6, 7 inwardly to cause the frame to collapse to a compact configuration, as shown in Figure 3. Thus, the crate 1 can be used for delivery, then stored for later use, in its folded configuration, such that it takes up minimal space.

The top frame may further include inner slots 44 on the front and back walls 40, 41, Thus, the crate is sturdy, and can be used for delivery of milk and water jugs, and other similar items, and as a file box. The multiple possible uses for the crate make it an ideal gimmick item, which can be utilized by a seller to deliver items, such as water or milk, hereby the customer is allowed to keep the crate. Thus, the customer may be encouraged to purchase items which are delivered in the crate, if allowed to keep the crate.

While the present invention has been described with regards to particular embodiments, it is recognized that additional variations of the present invention may be devised without departing from the inventive concept.